Amendments to the Claims:

1. (Canceled)

2. (Currently Amended) A method for routing packets through a switching network, wherein the switching network includes multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions, the method comprising:

coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme, and

generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a bicast cell, and the local input packets to each one of the switching elements includes idle, 0-bound, 1-bound and bicast packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by two bits, and the coding scheme includes coding the bits such that ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 0-bound packet type is different from ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 1-bound packet type.

3. (Currently Amended) A method for routing packets through a switching network, wherein the switching network includes multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions, the method comprising:

coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme, and

generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a routing cell, and the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by two bits, and the coding scheme includes coding the bits such that ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 0-bound packet type is different from ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 1-bound packet type.

4. (Canceled)

5. (Currently Amended) A system for routing packets comprising:

multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a

plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions,

an encoder for coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme, and

a generator for generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a bicast cell, and the local input packets to each one of the switching elements includes idle, 0-bound, 1-bound and bicast packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by two bits, and the coding scheme includes coding the bits such that ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 0-bound packet type is different from ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 1-bound packet type.

6. (Currently Amended) A system for routing packets comprising:

multiple stages of switching elements, each one of the switching elements receiving packets as local input packets on its input ports and producing packets as local output packets on its output ports, each of the packets having a plurality of in-band control signals where each one of the in-band control signals is utilized in a corresponding one of the switching elements as the local in-band control signal for the corresponding switching element to make switching decisions,

an encoder for coding each one of the in-band control signals of the packets into a plurality of bits based on a predetermined coding scheme, and

a generator for generating, with reference to the coding scheme, the output bits of the local output packets at each one of the switching elements based on a subset of the bits in the corresponding one of the in-band control signals for said each one of the switching elements to route the local input packets arriving at the corresponding switching element, wherein each one of the switching elements is a routing cell, and the local input packets to each one of the switching elements includes idle, 0-bound, and 1-bound packet types, and wherein each one of the packet types corresponds to a distinct in-band control signal, the coding includes coding each of the in-band control signals by two bits, and the coding scheme includes coding the bits such that ~~the first~~a bit in a left-most position of the code for the in-band control signal corresponding to a 0-bound packet type is different from ~~the first~~a bit in a left most position of the code for the in-band control signal corresponding to a 1-bound packet type.

7 – 10. (Canceled).

11. (Previously Presented) The method of claim 2, further comprising:

determining when two of the local input packets comprise idle and bicast packet types that are received at respective ones of the input ports;

bicasting or copying the bicast packet to generate at least two copies of the bicast packet and sending each of the copied bicast packets to respective ones of output ports; and

changing the copied bicast packet sent to one of the output ports to a 0-bound packet type and changing the copied bicast packet sent to the other output port to a 1-bound packet type.

12. (Previously Presented) The method of claim 3, further comprising:

determining when two of the local input packets comprise idle and bicast packet types that are received at respective ones of the input ports;

bicasting or copying the bicast packet to generate at least two copies of the bicast packet and sending each of the copied bicast packets to respective ones of output ports; and

changing the copied bicast packet sent to one of the output ports to a 0-bound packet type and changing the copied bicast packet sent to the other output port to a 1-bound packet type.

13. (Previously Presented) The system of claim 5, wherein the generator is further configured to:

determine when two of the local input packets comprise idle and bicast packet types that are received at respective ones of the input ports;

bicast or copy the bicast packet to generate at least two copies of the bicast packet and sending each of the copied bicast packets to respective ones of output ports; and

change the copied bicast packet sent to one of the output ports to a 0-bound packet type and changing the copied bicast packet sent to the other output port to a 1-bound packet type.

14. (Previously Presented) The system of claim 6, wherein the generator is further configured to:

determine when two of the local input packets comprise idle and bicast packet types that are received at respective ones of the input ports;

bicast or copy the bicast packet to generate at least two copies of the bicast packet and sending each of the copied bicast packets to respective ones of output ports; and

change the copied bicast packet sent to one of the output ports to a 0-bound packet type and changing the copied bicast packet sent to the other output port to a 1-bound packet type.

15. (New) The method of claim 2, wherein the input ports comprise first and second input ports and wherein bit in the left-most position of the code corresponding to the 0-bound packet type is the first bit received at the first input port and the bit in the left-most position of the code corresponding to the 1-bound packet type is the first bit received at a second input port.

16. (New) The method of claim 3, wherein the input ports comprise first and second input ports and wherein bit in the left-most position of the code corresponding to the 0-bound

packet type is the first bit received at the first input port and the bit in the left-most position of the code corresponding to the 1-bound packet type is the first bit received at a second input port.

17. (New) The system of claim 5, wherein the input ports comprise first and second input ports and wherein bit in the left-most position of the code corresponding to the 0-bound packet type is the first bit received at the first input port and the bit in the left-most position of the code corresponding to the 1-bound packet type is the first bit received at a second input port.

18. (New) The system of claim 6, wherein the input ports comprise first and second input ports and wherein bit in the left-most position of the code corresponding to the 0-bound packet type is the first bit received at the first input port and the bit in the left-most position of the code corresponding to the 1-bound packet type is the first bit received at a second input port.